ROTATABLE CONNECTION BETWEEN A TUBULAR MEMBER AND AN ELONGATE WIRE OF A CATHETER

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application Ser. No. 61/291,342, filed Dec. 30, 2009, the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

The disclosure is directed to a rotatable connection for a medical device. More particularly, the disclosure is directed to a rotatable connection between a tubular member and an elongate wire of a catheter for allowing rotational movement of the tubular member relative to the elongate wire.

BACKGROUND

Medical devices, such as catheters, are widely used in various medical procedures to access remote anatomical locations and/or deploy therapeutic devices. One exemplary catheter system is a drainage catheter delivery system configured to delivery a drainage catheter (e.g., stent) to a body lumen, such as a lumen of the biliary tree or a ureter. One embodiment of a drainage catheter delivery system, disclosed in U.S. Pat. No. 6,562,024, the disclosure of which is incorporated herein by reference, includes a guide catheter including a distal tubular portion and a proximal wire portion attached to the distal tubular portion. The guide catheter, including at least a portion of the distal tubular portion and at least a portion of the proximal wire portion may be slidably disposed in a lumen of a push catheter of the drainage catheter delivery system.

In some instances, the proximal wire portion of the guide catheter, which may share a lumen of the push catheter with a guidewire, may become twisted and/or entangled with the guidewire as the system moves through numerous turns during delivery of the drainage catheter to a target location in the anatomy of a patient.

Therefore, a need remains to provide a medical device construction configured to allow components of the medical device to rotate relative to other components of the medical device in order to prevent entanglement of the wire portion of a catheter with a guidewire.

SUMMARY

The disclosure is directed to several alternative designs and configurations of medical device structures and assemblies including locking mechanisms.

Accordingly, one illustrative embodiment is a catheter assembly including a handle assembly, a first tubular member coupled to the handle assembly and extending distally therefrom, a second tubular member disposed within a distal portion of the lumen of the first tubular member, and an elongate wire coupled to the second tubular member at a rotatable connection. The elongate wire extends proximally from the second tubular member through a proximal portion of the lumen of the first tubular member. The rotatable connection allows the second tubular member to rotate independently of the elongate wire. The rotatable connection may include a first tube having a distal portion fixedly secured to the second tubular member and a second tube fixedly secured to the elongate wire. The second tube may be disposed around a proximal portion of the first tube and being rotatable relative to the first tube.

Another embodiment is a drainage catheter delivery system including a handle assembly, a push catheter extending distally from the handle assembly, a guide catheter disposed in the lumen of the push catheter and having a distal portion extending distal of the distal end of the push catheter, and a drainage catheter disposed on a portion of the tubular member of the guide catheter extending distal of the distal end of the push catheter. The guide catheter includes a tubular member and an elongate wire coupled to the tubular member at a rotatable connection, wherein the rotatable connection allows the tubular member of the guide catheter to rotate independently of the elongate wire of the guide catheter. The rotatable connection may include a first tube having a distal portion fixedly secured to the second tubular member and a second tube fixedly secured to the elongate wire. The second tube may be disposed over a proximal portion of the first tube and rotatable relative to the first tube. In some instances, the central longitudinal axis of the elongate wire is offset from the central longitudinal axis of the tubular member.

Yet another embodiment is a catheter assembly including an elongate tubular member, an elongate wire, and a rotatable connection rotatably coupling the elongate wire to the elongate tubular member. The rotatable connection includes a first tube having a distal portion disposed in the lumen of the elongate tubular member and a proximal portion extending proximal of the proximal end of the elongate tubular member, and a second tube being fixedly attached to the elongate wire. The second tube is disposed around the proximal portion of the first tube and is rotatable relative to the first tube.

The above summary of some example embodiments is not intended to describe each disclosed embodiment or every implementation of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be more completely understood in consideration of the following detailed description of various embodiments in connection with the accompanying drawings, in which:

FIG. **1** is a plan view of an exemplary drainage catheter delivery system including a handle assembly having a locking mechanism;

FIG. **2** is a longitudinal cross-sectional view of the drainage catheter delivery system of FIG. **1**;

FIG. **3** is an enlarged view of a portion of the drainage catheter delivery system of FIG. **2** illustrating a rotatable connection between a tubular member and an elongate wire of a catheter assembly;

FIG. **4** is an exploded perspective view of components of the rotatable connection between the tubular member and the elongate wire of the catheter assembly of the drainage catheter delivery system of FIG. **1**;

FIG. **5** is a perspective view of the rotatable connection between the tubular member and the elongate wire of the catheter assembly of the drainage catheter delivery system of FIG. **1**; and

FIG. **6** is a longitudinal cross-sectional view of an alternative embodiment of a rotatable connection between a tubular member and an elongate wire of a catheter assembly.

While the invention is amenable to various modifications and alternative forms, specifics thereof have been shown by way of example in the drawings and will be described in detail. It should be understood, however, that the intention is not to limit aspects of the invention to the particular embodi-